

SAMPLE PLAN OF OPERATION

1.0 PURPOSE

This Plan of Operation has been prepared in accordance with requirements established by Tennessee Law, TCA 68-221-1006, and Clean Water State Revolving Fund (CWSRF) Rules, Chapter 1200-22-6, which require all CWSRF loan recipients to comply with a Plan of Operation approved by the Department of Environment and Conservation. The purpose of this Plan of Operation is to identify needs, actions, and the corresponding completion dates related to staffing, training, recordkeeping, reporting, laboratory control, start-up and process control, safety, emergency operations, maintenance management, Operation and Maintenance (O & M) Manual development and revision, and operational budgets during the construction, start-up, and performance certification periods.

2.0 SUMMARY OF IMPLEMENTATION ITEMS AND DATES

The implementation dates of the following sections are arrayed below in chronological order to allow rapid identification of action items and related completion dates. Frequent reference to this listing will help avoid the possibility of omission or slippage of key actions necessary for successful plant start-up and continued operation.

<u>Date</u>	<u>Action</u>	<u>Plan of Operation Section Reference</u>
May 1990	Start Construction of treatment facility	10(a)
July 1990	Establish new Sewer Use Ordinance to accommodate industrial discharges	10(a)
	Establish Industrial Pretreatment Ordinance	10(b)
June 1991	FY 92 pre-start-up budget consideration	9
January 1992	Superintendent (Chief Operator) hired	2(a)
	Complete draft of O & M Manual	8(a)
	Review of User Charge and Industrial Cost Recovery Systems	9
June 1992	Senior Operator hired	2(a)
	Chief Chemist hired	2(a)
August 1992	Begin influent sampling program	4(a)
	Begin development of detailed Emergency Procedures Plan	6(a)
September 1992	Begin development of detailed guidance on employee safety and related training program	5(a)
October 1992	Staff training schedule finalized and approved by State	2
January	Begin development of action plan for process control	4(b)

y 1993	and “fine tuning”	6(b)
	Begin finalization of cooperative agreements with other agencies	7(b)
	Begin specialized training on incinerator O & M	
February 1993	Shift operators on-board	2(d)
	Complete detail of Emergency Procedures Plan	6(a)
	Begin provision on laboratory supply inventory	3(b)
	Begin finalization of system and procedures for notification of unusual industrial waste discharges	4(d)
	Begin training of plant personnel on maintenance procedures	6(c)
	Finalize O & M Manual	8(b)
March 1993	Complete detailed guidance on employee safety and related training program	5(a)
	Finalize cooperative assistance agreements with other agencies	6(b)
	Start review of laboratory analytical and reporting requirements with operators and laboratory staff	3(a)
	Complete development of action plan for process control and “fine tuning”	4(b)
	Start safety training program	5(b)
	Begin debugging of Maintenance Management System computer software	7(c)
April 1993	Complete review of laboratory analytical and reporting requirements with plant staff	3(a)
	Complete inventory of laboratory supplies	3(b)
	Complete employee training in emergency procedures	6(c)
	Complete spare parts inventory	7(a)
	Complete specialized training on incinerator O & M	7(b)
	Start review of process control and detailed start-up procedure with plant staff	4(c)
	Begin training on Maintenance Management System usage	7(d)
	Begin pre-start-up maintenance schedule	7(e)
	Maintenance crew on-board	2(e)
	Complete training in heavy metals analysis	3(c)
	Treatment facility design, construction, operations records, and as-built plans completed on file	3(d)
	Complete review of process control and detailed start-up procedures with plant staff	4(c)
	Complete influent sampling program	4(a)
	Finalize system and procedures for notification of unusual industrial waste discharges	4(d)
	Complete safety training program	5(b)
June 1993	Complete dry and wet testing of all equipment	4(e)
	Complete construction of treatment facility (facility ready for operation)	5(c)
	Start periodic safety reviews with staff	7(f)
	Complete training of plant personnel on maintenance procedures	
June	Conduct first annual plant safety review and modify	5(d)

1994	safety program, if necessary	
	Initiate annual emergency procedures update and employee training program	6(d)
	Update O & M Manual	8(d)
	Complete first annual treatment system O & M Report	10(c)

3.0 OPERATION AND MAINTENANCE (O & M) MANUAL

3.1 O & M Manual Development and Revision Schedule

The O & M Manual should be drafted, finalized, approved, and updated in accordance with the following schedule:

<u>Action</u>	<u>Date</u>
Drafted	January 1992
Finalized	February 1993
Approved	April 1993
Updated based upon first year of operating experience	June 1994

3.2 Staffing Requirements

NOTE: Staffing requirements for the administration, operation, and maintenance of the expanded treatment facilities must be identified and developed prior to facility start-up. The chief operator of the facility must be hired and on-board at the 50% completion point of the construction phase of the project. Some of the items to consider in this section are a staffing schedule, the use of existing staff to meet new manpower requirements, and staff organization.

The recommended staffing complement and a suggested organizational chart is included in Section ___ of the O & M Manual. The City has been notified of the requirement to hire the chief operator and have him on-board when the project is 50% complete. Recruitment actions will begin soon.

The staff of the facility should be hired to allow adequate time for familiarization with the new facility and to adequately prepare for start-up in accordance with the following schedule:

<u>Staff</u>	<u>Date</u>
Superintendent (Chief Operator) on-board	January 1992
Senior Operator on-board	June 1992
Chief Chemist on-board	June 1992
Shift Operators on-board	February 1993

3.3 Training

NOTE: Training requirements for the administration, operation, and maintenance of the expanded treatment facilities must be identified and developed prior to facility start-up. Some of the items to consider in this section are the identification of the need for new or special skills including staff certification, training materials, training strategies and responsibilities, training schedules for the construction period and start-up and operational phases, and standardizing operating procedures.

Training needs must be identified in cooperation with the Division of Water Pollution Control. The individual needs of each person hired should be evaluated. A training schedule should be finalized no later than October 1992. It is anticipated that additional training in activated sludge process control will be needed for this new facility. In scheduling the training activities, consideration should be given to the available training courses.

Certain specialized training needs have been identified for this new facility and are discussed as appropriate in other sections of this Plan.

3.4 Records, Reports, and Laboratory Control

Records, reporting requirements, and laboratory control procedures will be reviewed to determine the adequacy of the existing laboratory procedures and reports, to ensure that adequate supplies are maintained for required testing, and to determine the need for an outside testing laboratory to perform additional tests. Necessary changes and modifications to the existing recordkeeping, reporting, and control procedures will be developed and incorporated into the facility's O & M Manual.

A review of laboratory operation procedures will be made during the start-up period to determine if testing, records, reports, and laboratory controls described in the O & M Manual are being followed or if any revisions, modifications, or additions to these procedures are required. All such changes will be incorporated in the updated O & M Manual following the one-year performance certification period.

Examples of daily log sheets, Tennessee Department of Environment and Conservation reporting forms, and self-monitoring report forms necessary to comply with the NPDES Permit requirements are included in Section ___ of the O & M Manual. No special reporting requirements have been identified. However, certain heavy metals analysis must be included due to anticipated discharges from the industrial park served by this facility.

<u>Action</u>	<u>Start Date</u>	<u>Completion Date</u>
Conduct review of laboratory analytical and reporting requirements with operators and laboratory staff	March 1993	April 1993
Provide inventory of laboratory supplies	February 1993	April 1993
Complete training in heavy metals analysis (Identify source of training)		May 1993
Treatment facility design,		May

construction, and operation records
and as-built plans completed and on
file in superintendent's office

1993

3.5 Process Control and Start-up Procedures

Process control and start-up procedures are detailed in Sections ____ and ____, respectively, of the O & M Manual. Items to be address were prepared with input from the contractor, engineer, and plant operations personnel. Implementation of the actions identified in those sections should occur in accordance with the following schedule:

<u>Action</u>	<u>Start Date</u>	<u>Completi on Date</u>
Begin sampling program to define plant influent characteristics	August 1992	May 1993
Develop action plan for process control and "fine tuning" Review equipment manufacturer O & M Manual Schedule specific training and instruction of operations personnel	January 1993	March 1993
Finalize system and procedures for notification of unusual industrial waste discharges Develop maintenance and inventory schedule for spare parts, lubrication, and supply needs for each item of equipment Develop and implement safety and emergency operating procedures including instructions to operating personnel.	February 1993	May 1993
Review process control and detailed start-up procedures with plant operations and laboratory staff Finalize instruction and training of operation and maintenance personnel Develop schedule for sequence of start- up procedures	April 1993	May 1993
Complete manufacturer checkout and dry and wet testing of all equipment Implement equipment maintenance records system and lubrication schedule		June 1993

3.6 Safety Program

The needs and specifics of the safety program for this facility are detailed in Section ____ of the O & M Manual. Activities related to safety should be implemented in accordance with the following schedule:

<u>Action</u>	<u>Start</u>	<u>Completi</u>
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	<u>Date</u>	<u>on Date</u>
Develop detailed guidance on employee safety and related training program including conducting safety training and implementing periodic safety reviews	September 1992	March 1993
Conduct training program for all plant staff prior to start-up	March 1993	May 1993
Start periodic safety reviews with staff		June 1993
Conduct first annual plant safety review and modify safety program if necessary		June 1994

3.7 Emergency Operating Plan/Procedures

The Emergency Operating Plan addresses the development of emergency and training procedures to identify and limit the effects of system vulnerabilities, to assess the effect of emergencies on facility performance, and to plan and implement facility protective measures and effective emergency responses. Detailed emergency operating procedures are outlined in Section ____ of the O & M Manual. To ensure the success of these procedures during an emergency, the following actions should be taken:

<u>Action</u>	<u>Start Date</u>	<u>Completion Date</u>
Develop details of Emergency Procedures Plan including personnel assignments	August 1992	February 1993
Finalize cooperative assistance agreements with other agencies	January 1993	March 1993
Pre-start-up employee training	February 1993	April 1993
Initiate annual update of procedures and employee training program		June 1994

3.8 Maintenance Management

The Maintenance Management System for this facility is outlined in Section ____ of the O & M Manual. The Maintenance Management System will utilize the City's computer capability to provide an equipment identification system, maintenance and trouble shooting guides, routine scheduling of preventive maintenance activities, spare parts inventory control, and records of running time and reliability of performance.

To successfully implement this Maintenance Management System, the following actions must be taken:

<u>Action</u>	<u>Start Date</u>	<u>Completion Date</u>
Complete spare parts inventory including necessary tools		April 1993
Conduct specialized training on incinerator operation and maintenance by equipment supplier	January 1993	April 1993
Debugging of computer software by subcontractor	April 1993	May 1993
Conduct training on system usage by subcontractor	April 1993	May 1993
Begin pre-start-up maintenance schedule		May 1993
Provide training of plant personnel on	February	June

4.0 OPERATION AND MAINTENANCE BUDGET

This facility is scheduled to begin operation in June 1993. Since the hiring and training of personnel should begin in January 1992, appropriate considerations of related costs must be provided in the City's FY 92 budget. Consideration for pre-start-up and full operation costs must be reflected in the City's FY 93 budget with the first full year of operation being FY 94. The City's user charge system and rate structure should be reviewed and revised, as necessary, by January 1992, and annually, thereafter, concurrently with the City's annual budgetary planning process in order to assure adequate funding to sustain the necessary operating and maintenance revenues, repay the CWSRF loan, and fund depreciation.

5.0 OTHER ELEMENTS

NOTE: At this time, the Division of Water Pollution Control does not require a Pretreatment Ordinance. However, a Sewer Use Ordinance must be adopted by the City and submitted to the Division of Community Assistance for review and approval prior to the submittal of plans and specifications.

The City's new wastewater treatment facility satisfies needs requiring responsive actions. To complete pre- and post-start-up activities that will ensure continued operational success, the following actions must be taken in addition to those previously identified:

<u>Action</u>	<u>Start Date</u>
Establish new Sewer Use Ordinance	June 1990
Establish Industrial Pretreatment Ordinance	July 1990
Complete first annual treatment system O & M Report including recommendations on budget, staffing, training, maintenance and repairs, and future needs.	June 1994